

Claims

1. A method of manufacturing at least a portion of a sole of an article of footwear, the method comprising the steps of:
 - providing a sole element and a support element, wherein the sole element and the support element comprise a common polymer-based material;
 - positioning the sole element and the support element in a mold; and
 - applying at least one of heat and pressure to the mold, thereby attaching the sole element with the support element, wherein the sole element and support element exhibit a different mechanical property.
2. The method of claim 1, wherein the mechanical property is selected from the group consisting of hardness, stiffness, resiliency, and compliancy.
3. The method of claim 1, wherein at least one of the sole element and the support element is made from a partially vulcanized preform.
4. The method of claim 1, wherein the applying step co-vulcanizes the sole element and the support element.
5. The method of claim 1, wherein the polymer-based material comprises ethylene vinyl acetate.
6. The method of claim 1, wherein the support element comprises:
 - a vinyl acetate content of about 18% to about 25%;
 - at least one peroxide; and
 - a co-agent.
7. The method of claim 6, wherein the co-agent is selected from the group consisting of acrylates and isocyanates.
8. The method of claim 1, wherein the sole element comprises:

a vinyl acetate content of about 18% to about 27%; and
at least one peroxide.

9. The method of claim 8, wherein the sole element further comprises a blowing agent for foaming the sole element in the mold.
10. A sole for an article of footwear, the sole comprising:
a sole element; and
at least one support element, wherein the sole element and the support element comprise a common polymer-based material, each exhibiting a different mechanical property and being attached by co-vulcanization.
11. The sole of claim 10, wherein the polymer-based material comprises ethylene vinyl acetate.
12. The sole of claim 10, wherein the mechanical property is selected from the group consisting of hardness, stiffness, resiliency, and compliancy.
13. The sole of claim 10, wherein at least one of the sole element and the support element is made from a partially vulcanized preform.
14. The sole of claim 10, wherein the support element comprises:
a vinyl acetate content of about 18% to about 25%;
at least one peroxide; and
a co-agent.
15. The sole of claim 14, wherein the co-agent is selected from the group consisting of acrylates and isocyanates.
16. The sole of claim 10, wherein the sole element comprises:
a vinyl acetate content of about 18% to about 27%; and

at least one peroxide.

17. The sole of claim 16, wherein the sole element further comprises a foam.
18. The sole of claim 10, wherein the support element comprises a hardness of no less than about Shore A 80 to 95.
19. The sole of claim 10, wherein the support element comprises a hardness of no greater than about a Shore D range.
20. An article of footwear comprising:
 - an outsole;
 - an inner sole;
 - an upper; and
 - a midsole including at least one support element, wherein the midsole and the at least one support element comprise a common polymer-based material, each exhibiting a different mechanical property and being attached by co-vulcanization.

TECHNICAL DRAWING